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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/086,772 05/29/98 JANG

S TSMC97-306

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EXAMINER

NGUYEN, C

ART UNIT

PAPER NUMBER

1754

DATE MAILED:

07/01/99

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/086,772

Applicant(s)
Jang et al.

Examiner
Cam Nguyen

Group Art Unit
1754



☐ Responsive to communication(s) filed on _____.

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 1-16 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-16 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 3

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

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DETAILED ACTION

Claim Rejections - 35 USC § 112 (second paragraph)

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 2 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Line 2 of the claims contain the phrase “such that” does not particularly point out what applicants intend.

Claim Objections

3. Claim 16 is objected to because of the following informalities: It appears that applicants intend is to have claim 16 depending from claim 9 rather than claim 1 since claim 16 is a dielectric. Appropriate correction is required.

Claim Rejections - 35 USC § 102(b)/103(a)

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.

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3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

The art area applicable to the instant invention is that of semiconductor materials production.

One of the ordinary skill in this art is considered to have at least a B.S. degree in Chemical Engineering or Chemistry, with additional education in the field and at least 5 years practical working in the art. He is aware of the state of the art as shown by the references of record, to include those cited by applicant and the examiner (ESSO Research & Engineering V Kahn & Co, 183 USPQ 582 1974) and who is presumed to know something about the art apart from what the references alone teach (In re Bode, 193 ISPQ 12, (16) CCPA 1977; and who is motivated by economics to depart from the prior art to reduce costs consistent with the desired product characteristics. (In re Clinton 188 USPQ 365 (367) CCPA 1976 and In re Thompson 192 USPQ 275 (277) CCPA 1976.

7. Claims 1-16 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Yu et al., Yu, (5,700,737).

Yu discloses a method of forming electrode patterns comprising the steps of: providing an integrated circuit element having devices formed therein; providing a base dielectric layer formed on said integrated circuit element; forming a conductor metal layer on said base dielectric layer; forming an anti-reflection material layer on said conductor metal layer, wherein said anti-reflection

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material is titanium nitride; forming a silicon nitride etch stop layer on said anti-reflection material layer; forming a photoresist layer on said silicon nitride etch stop layer; forming an electrode pattern in said photoresist using photolithographic techniques; forming said electrode pattern in said silicon nitride etch stop layer by means of anisotropic dry etching using said electrode pattern formed in said photoresist as a mask and a first etchant; forming said electrode pattern in said anti-reflection material by means of anisotropic dry etching using said pattern formed in said photoresist and said electrode pattern formed in said silicon nitride etch stop layer as a mask and $\text{BCl}_3 + \text{Cl}_2$ as an etchant; forming said electrode pattern in said conductor metal by means of anisotropic dry etching using said electrode pattern formed in said photoresist and said electrode pattern formed in said silicon nitride etch stop layer as a mask and a third etchant; removing said electrode pattern formed in said photoresist; and forming an inter-metal dielectric layer over said integrated circuit element covering said electrode pattern formed in said silicon nitride, said electrode pattern formed in said anti-reflection material, said electrode pattern formed in said conductor metal, and said base dielectric layer (see col 4-5, claim 1).

There is no distinction, either per se or unobvious, seen between the instant method and that of the reference.

Citations

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Yu et al. (5,858,623), Jang et al. (5,622,894), Jang et al. (5,721,172), Jang et al.

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(5,840,624), Havemann et al. (5,472,913), Havemann et al. (5,661,344), Chiu (4,994,402), Choi et al. (5,013,686), Ajika et al. (5,162,262), Abernathey et al. (5,219,788), Jun (5,256,248), and Rhoades et al. (5,269,879) are cited for production of semiconductor materials.

Conclusion

9. No claims are allowed.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Cam Nguyen whose telephone number is (703) 305-3923. The examiner can normally be reached on M-F from 8:00 am. to 5:30 pm.

The appropriate fax phone number for the organization where this application or proceeding is assigned is (703) 305-3599.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Nguyen/cnn

June 28, 1999



GARY P. STRAUB
PRIMARY PATENT EXAMINER
ART UNIT 113